Electrolux

SERVICE MANUAL

REFRIGERATION

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Customer Care - EMEA
Training and Operations Support
Technical Support

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ERF2530

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REVISIONS:

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00	06/2010	Document creation	PR	
01	09/2010	Added variants on “Service Mode” activation and Summary	PR	
02	05/2011	Document Updated; Demo Mode chapter added	PR	

1 PURPOSE

The purpose of this manual is to provide service personnel (who already have the basic knowledge necessary for repairing refrigerators and freezers) with information on appliances equipped with the ERF2001 or ERF2530 electronic control system.

This Manual describes:

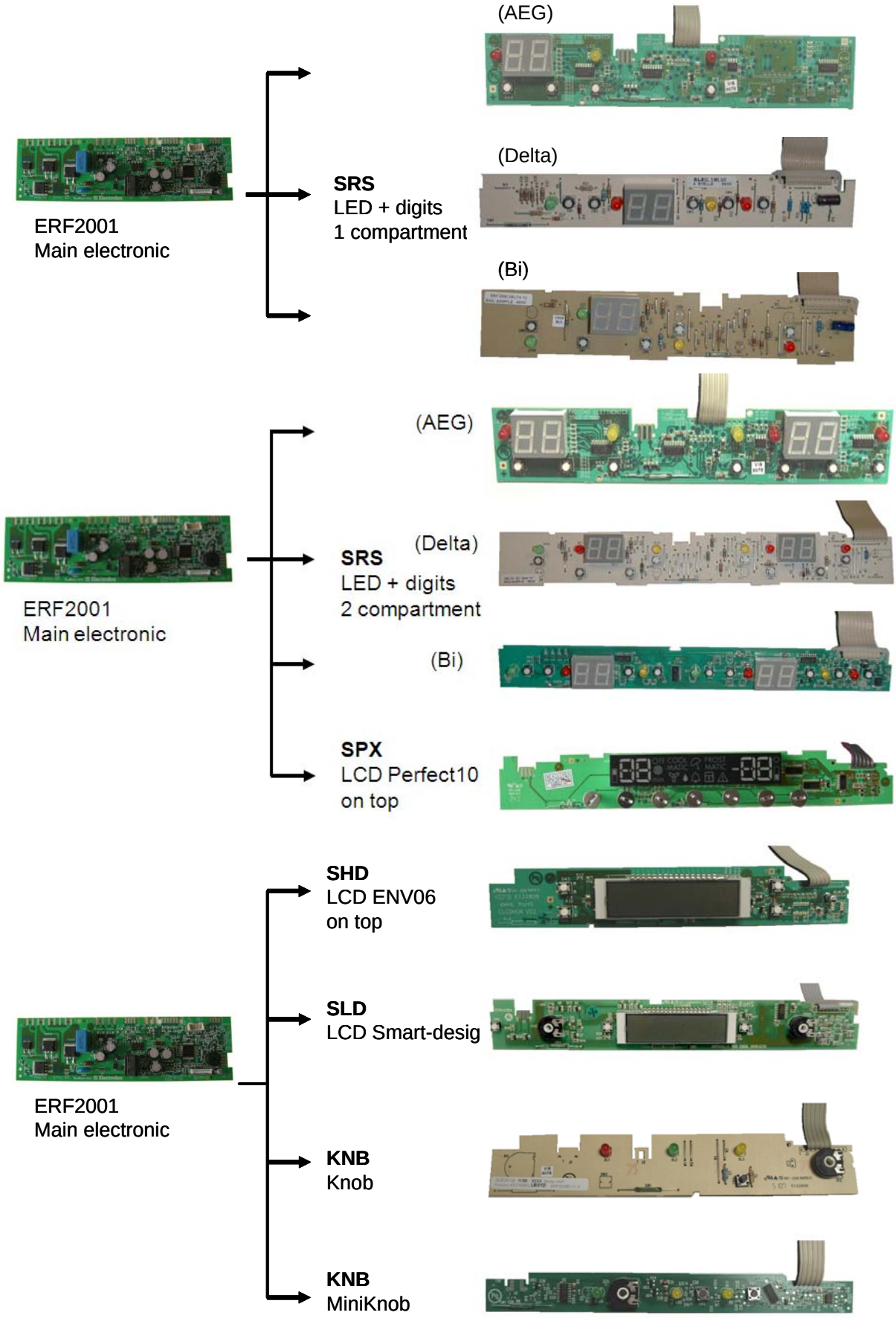
- User Interfaces that could be connected with
- Service Mode activation
- Tests that could be processed

2 PRECAUTIONS

- **Electrical appliances must be serviced only by qualified Service Engineers.**
- **Always remove the plug from the power socket before touching internal components.**

3 GENERAL CHARACTERISTICS

The main electronic can be connected to different types of user interfaces. The main electronic communicates to the not insulated user interfaces via six wires.



4 SERVICE MODE

4.1 Service Mode Activation

The activation of the Service Mode is depends on the Software, which is loads on the electronic. There are two variants of activation in the Service Mode

Variant 1:
- Switch on the appliance
- Open the door
- Unplug the appliance
- Plug in the appliance

Variant 2:

- Switch on the appliance

Then valid for both:
  - o After 6 sec. pressing any push button (from now on this button will be the „**next**“-key) except the On/Off-button for 5 sec. The push button must be pressed in the timeframe from 6 to 16 sec, otherwise the Service Mode is not activated.

The Service Mode activation is confirmed by a short beep from the buzzer device.
Each other push button will be the “action-key” when pressed after that.

Definition of “**next**-key” and “**action**-key”:
- the „**next**“-key can be any push button except the On/Off-button. With the „**next**“-key, you can activate the Service Mode and you can change in a new test-phase.
- the „**action**“-key can be any push button except the „**next**“-key. With the „**action**“-key, you can switch on and off the components.

4.2 Component test

The component tests are different notified in the several phases on the user interface.

All LEDs **on** or **off**	→	SRS	LED + digits
„FLOWER“-sign **on** or **off**	→	SHD	LCD ENV06
“UMBRELLA”-sign **on** or **off**	→	SPX	LCD Perfect10 on top
„SNOWFLAKE“-sign **on** or **off**	→	SLD	LCD Smart-Design
Potentiometer:			
Completely counter clockwise LEDs off	→	KNB	Knob and MiniKnob
Completely clockwise LEDs on	→	KNB	Knob and MiniKnob

4.3 User Interface visual test

Depending on the version of the appliance, all notification on the display and LEDs are switched **on**.
Pressing the push button „**next**“.

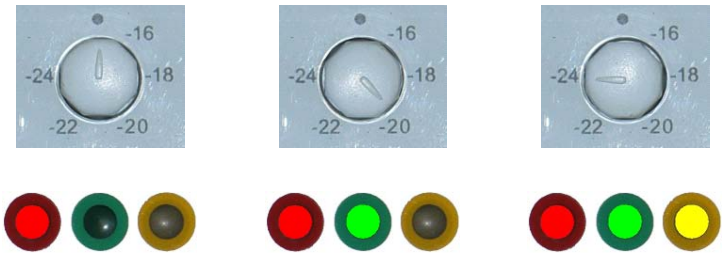
SRS, SHD, SPX, SLD: All notifications on the display and LEDs are switched **off**. The push button „**action**“ is not used in these phase.

SLD: It starts the potentiometer test.

The display will be show.
„Cx“ for the cooler knob,
„Fx“ for the freezer knob
„x“ is a number between 0 and 9
Turn the knob clockwise, „x“ is increasing to „9“
Turn the knob counterclockwise, „x“ is decreasing to „0“

Pressing the push button „**next**“ again to go in the next phase.

KNB: The potentiometer test starts. When the knob turning clockwise (counter clockwise) the LEDs are switched **on** (off) step by step.



Pressing the push button „**next**“ again to go in the next phase.

4.4 AC output test

	SRS. SHD SPX. SLD	KNB		
AC-Load	Index	Alarm	Power	Super
Cooler Compressor	0	off	off	on
Freezer Compressor	1	off	off	blinking
Heater	2	off	on	off
Cooler Lamp	3	off	on	on
AC Evaporator Fan	4	off	on	blinking
AC Cooler Fan	5	off	blinking	off
Electro Valve	6	off	blinking	on
AC Zero-Degree Fan	7	blinking	blinking	off
no displayed	8	=	=	=
Freezer Lamp	9	=	=	=
no displayed	10	=	=	=
no displayed	11	=	=	=
AC Conndenser Fan	12	=	=	=
Cooler VCC Compressor	37	=	=	=
Freezer VCC Compressor	38	=	=	=
Balance Heater	42	blinking	blinking	on
Frame Heater	43	blinking	blinking	blinking

Are defined to be tested every AC component connected to the electronic. There are 6 ACS Triacs on the electronic for only 6 components to test. When the Service Mode starts, all components are switched off.

SRS, SHD, SPX, SLD:
On the display is notified the index of the component.

Pressing the push button „**action**“ switched **on** and **off** the component

KNB:
Turning the knob completely clockwise, the component is on.
LEDs are ON, OFF or blinking (look the table).

Turning the knob completely counter clockwise, the component is off.

Pressing the push button „**next**“, you activate the next component.

Pressing the push button „**next**“ again to go in the next phase.

4.5 Digital output test

	SRS, SHD SPX, SLD	KNB		
Digital Output	**Index**	**Alarm**	**Power**	**Super**
Cooler Torch	13	on	off	off
Zero Degree Torch	14	on	blinking	blinking
DC Evaporator Fan	15	on	off	on
DC Cooler Fan	16	on	on	off
DC Zero Degree Fan	17	on	on	on
DC Condenser Fan	18	=	=	=
Glacier	19	=	=	=
Treezer Torch	20	=	=	=
DC Air Filter Fan	21	=	=	=

Are defined to be tested every digital output of components connected to the electronic. There are 2 digital output to test only 2 components. When the Service Mode starts, all components are switched off.

SRS, SHD, SPX, SLD:
On the display is indicated the index of the component.

Press the push button „**action**“, to switch the component **on** and **off**.

If the digital output is off: (old software)
Pressing „**action**“ command, fan activated → with half speed (sign ON).
Pressing „**action**“ command, fan activated → with full speed (sign ON).

If the digital output is off: (new software)
Pressing „**action**“ command, fan activated → with half speed (sign BLINKING).
Pressing „**action**“ command, fan activated → with full speed (sign ON).

Press the push button „**next**“, to activate the next component.

Press the push button „**next**“ again to go to the next phase.

KNB:
Turning the knob completely clockwise, the component is **on**.
LEDs are ON, OFF or blinking (look the table)

Turning the knob completely counter clockwise, the component is **off**.

In case of variable speed fan: (old software)
middle knob position Fan with half speed. (LED ON)
completely clockwise Fan with maximum speed. (LED ON)

In case of variable speed fan: (new software)
middle knob position Fan with half speed. (LED BLINKING)
completely clockwise Fan with maximum speed. (LED ON)

Pressing the push button „**next**“, you active the next component.

Pressing the push button „**next**“ again to go in the next phase.

4.6 Damper test

	SRS. SHD SPX. SLD	KNB		
Damper test	Index	Alarm	Power	Super
no displayed	22	=	=	=
Remote Damper	44	=	=	=

No damper is present, but It can be connected a remote damper to the power board through an external damper driver board.

Press the push button „action“, to switch the component on (open) and off (close).

Pressing the push button „**next**“ again to goes in the next phase.

4.7 Digital input test

	SRS. SHD SPX. SLD	KNB		
Digital Input	Index	Alarm	Power	Super
Cooler Door	23	on	on	blinking
Freezer Door	24	on	blinking	on
Zero Degree Door	25	on	blinking	off
Heater Switch	26	on	off	blinking
no displayed	27	=	=	=
no displayed	28	=	=	=
Rapid Drink Cooler	40	=	=	=

Are defined to be tested every digital input of components connected to the electronic.

SRS, SHD, SPX, SLD:
If Digital input is open: LEDs and the sign is **on**.
If Digital input is closed: LEDs and the sign is **off**.

The push button „**action**“ is not used in these phases.

KNB:
Turning the knob completely clockwise, the LEDs are **on**.

Turning the knob completely counter clockwise, the LEDs are ON, OFF or blinking (look the table).

Pressing the push button „**next**“, you actived the next component.

Pressing the push button „**next**“ again to go in the next phase.

4.8 Temperature probe test

	SRS. SHD SPX. SLD	KNB		
Temperature	Index	Alarm	Power	Super
Cooler Air Temperature	29	blinking	off	off
Freezer Air Temperature	30	blinking	off	on
Cooler Evaporator Temperature	31	blinking	off	blinking
Zero Degree Air Temperature	32	off	blinking	blinking
PB Ambient Temperature	33	blinking	on	off
UI Ambient Temperature	34	blinking	on	on
Freezer Evaporator Temperature	39	blinking	on	blinking

Are defined to be tested every temperature probe connected to the electronic.

SRS, SHD, SPX, SLD:

If the sensor related to the probe detects an acceptable value of temperature:
The display is notified the index. All LEDs (non-digit) are **off**.

If the sensor has an interrupt:
The display is notifing and blinking the current temperature index and message failure „Er“. All LEDs (non-digit) are **off**.

The push button „**action**“ is not used in these phases.

Pressing the push button „**next**“ again to go in the next phase

KNB
(If the sensor related to the probe detects an acceptable value of temperature):
Turning the knob completely clockwise, LED „Power“ is **on**.

Turning the knob completely counter clockwise, the LEDs are ON,
OFF or blinking (look the table).

KNB (If the sensor has an interruption):
Turning the knob completely clockwise, the LEDs „Alarm, Super“ are **on**.

Turning the knob completely counter clockwise, the LEDs are ON,
OFF or blinking (look the table).

Pressing the push button „**next**“, you active the next component.

Pressing the push button „**next**“ again to go in the next phase.

4.9 Software and Parameters

Depends on number of microprocessors on user interface and power board. All codes of software and parameters are notified on the display.

SRS, SHD, SPX, SLD:
The digits shows letter by letter.
The digits shows each character in second steps and a short beep from the buzzer.

Between two different codes a bar is showed **on** digits for one second.

The push button „**action**“ is not used in these phases.

KNB:
Is not present.

Pressing the push button „**next**“ again to go in the next phase

Software
Storage Code (8 numeric characters)
PB Software Name (8 characters)
PB Software Production Name (8 characters)
UI Software Name (8 characters)
UI Software Production Name (8 characters)

4.10 Life time display

SRS, SHD, SPX, SLD:
The maximum value can be notified 9999 days. Each number is notified on the display (starting from Most Significant) if you pressing „**next**“ push button, a short beep from the buzzer device and showing the next digit.

Pressing the push button „**next**“ again to go in the next phase.

KNB:
Is not present.

4.11 Final phase

SRS, SHD, SPX, SLD:
On the display is notified a time counter in second steps the number 0 to 99.

To return to the normal mode you have to press for 5 seconds the „**action**“ push button which made start the Service mode.

KNB :
The LEDs are switching **on** and **off** one by one.

5 Service Mode Summary

	SRS. SHD SPX. SLD	KNB		
Component	Index	Alarm	Power	Super
Cooler Compressor	0	off	off	on
Freezer Compressor	1	off	off	blinking
Heater	2	off	on	off
Cooler Lamp	3	off	on	on
AC Evaporator Fan	4	off	on	blinking
AC Cooler Fan	5	off	blinking	off
Electro Valve	6	off	blinking	on
AC Zero-Degree Fan	7	blinking	blinking	off
no displayed	8	=	=	=
Freezer Lamp	9	=	=	=
no displayed	10	=	=	=
no displayed	11	=	=	=
AC Conndenser Fan	12	=	=	=
Cooler Torch	13	on	off	off
Zero Degree Torch	14	on	blinking	blinking
DC Evaporator Fan	15	on	off	on
DC Cooler Fan	16	on	on	off
DC Zero Degree Fan	17	on	on	on
DC Condenser Fan	18	=	=	=
Glacier	19	=	=	=
Treezer Torch	20	=	=	=

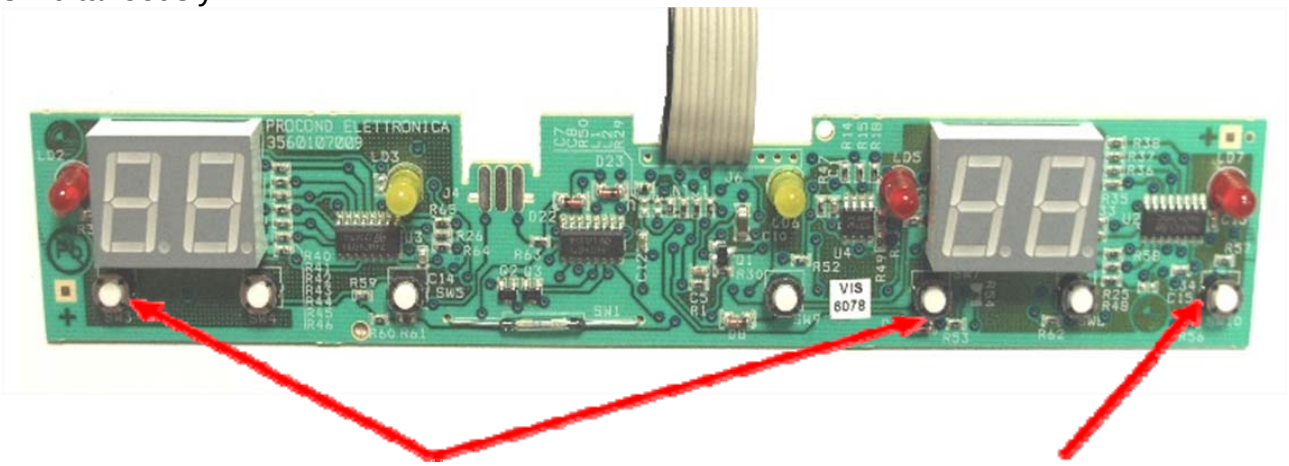
	SRS. SHD SPX. SLD	KNB		
Component	Index	Alarm	Power	Super
DC Air Filter Fan	21	■	■	■
no displayed	22	■	■	■
Cooler Door	23	on	on	blinking
Freezer Door	24	on	blinking	on
Zero Degree Door	25	on	blinking	off
Heater Switch	26	on	off	blinking
no displayed	27	■	■	■
no displayed	28	■	■	■
Cooler Air Temperature	29	blinking	off	off
Freezer Air Temperature	30	blinking	off	on
Cooler Evaporator Temperature	31	blinking	off	blinking
Zero Degree Air Temperature	32	off	blinking	blinking
PB Ambient Temperature	33	blinking	on	off
UI Ambient Temperature	34	blinking	on	on
Cooler VCC Compressor	37	■	■	■
Freezer VCC Compressor	38	■	■	■
Freezer Evaporator Temperature	39	blinking	on	blinking
Rapid Drink Cooler	40	■	■	■
Balance Heater	42	blinking	blinking	on
Frame Heater	43	blinking	blinking	blinking
Remote Damper	44	■	■	■

6 Demo Mode

6.1 User interface SRS (old software, until March 2011)

The Demo Mode can be activated only when on single-appliances and combi-appliances the air temperature is warmer than 10°C in the compartment or the temperature probes are disconnected.

Demo Mode activation:
Switch on the appliance and press for 5 sec. the button „**On/Off**“ and „**Minus**” simultaneously.



a) On the display appears as interval, 4 sec. on and 1 sec. off
   Display refrigerator +8 C
   Display freezer -18 C
b) Lamp is switched on when the door is opened.
c) The door alarm is activated.

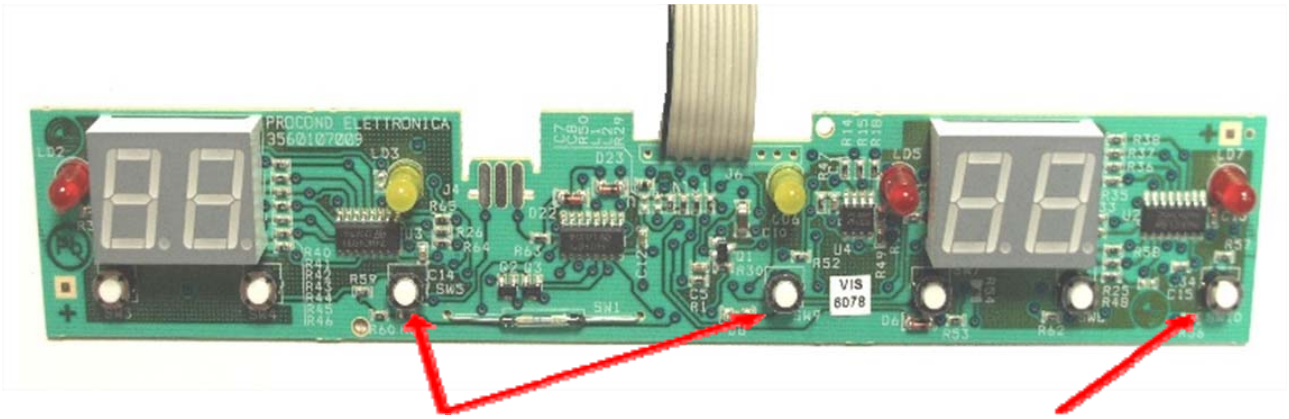
Demo Mode deactivation:

Switch off the appliance or press for 5 sec. the button „**On/Off**“ and „**Minus**“ simultaneously.

6.2 User interface SRS (new software, from April 2011)

The Demo Mode can be activated only, when on single-appliances and combi-appliances the air temperature is warmer than 10°C in the compartment or the temperature probes are disconnected.

Demo Mode activation:
During the first minute after switch on the appliance, press the “**Super**” button (Coolmatic or Frostmatic) or the “**Reset**” button for 9 times.



a.) On the display appears as interval, 4 sec. on and 1 sec. off
Display refrigerator +8 C
Display freezer -18 C
b.) Lamp is switched on when the door is opened.
c.) The door alarm is activated.

Demo Mode deactivation:
Switch off the appliance or press 9 times the "**OK**" button.

6.3 User interface SHD

The Demo Mode can be activated only when on single-appliances and combi-appliances the air temperature is warmer than 10°C in the compartment or the temperature probes are disconnected.

Demo Mode activation:
Switch on the appliance and press for 5 sec. the button „**On/Off**" and „**Function**" simultaneously.

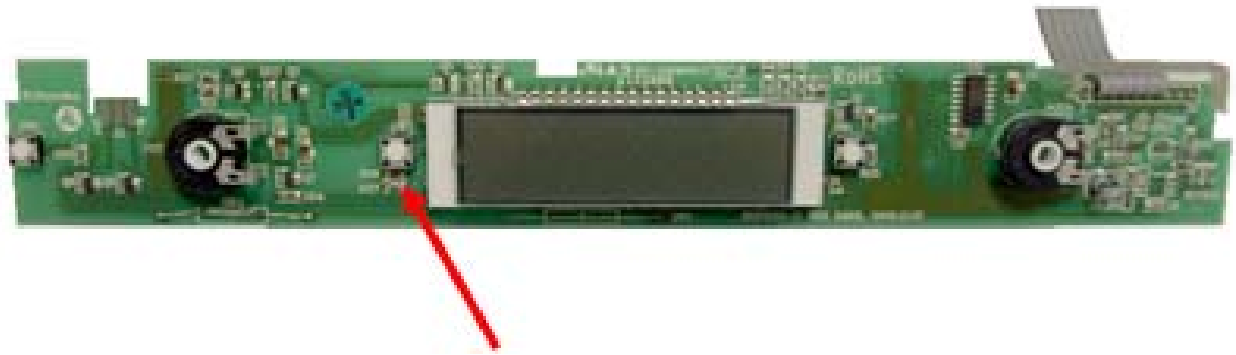
a.) On the display appears as interval, 4 sec. on and 1 sec. off
Display refrigerator +5 C
Display freezer -18 C
b.) Lamp is switched on when the door is opened.
c.) The door alarm is activated.

Demo Mode deactivation:
Switch off the appliance or press for 5 sec. the button „**On/Off**“ and „**Function**” simultaneously.

6.4 User interface SLD

The Demo Mode can be activated only when on single-appliances and combi-appliances the air temperature is warmer than 10°C in the compartment or the temperature probes are disconnected.

Demo Mode activation:
Switch on the appliance and press for 5 sec. the button „**Temperature**“.



a.) On the display appears as interval, 4 sec. on and 1 sec. off
Display refrigerator +5 C
Display freezer -18 C
b.) Lamp is switched on when the door is opened.
c.) The door alarm is activated.

Demo Mode deactivation:
Switch off the appliance or press for 5 sec. the button „**Temperature**“.

6.5 User interface SPX (Perfect10, old software until March 2011)

The Demo Mode can be activated only, when on single-appliances and combi-appliances the air temperature is warmer than 10°C in the compartment or the temperature probes are disconnected.

Demo Mode activation:
During the first minute after switch on the appliance, press the “**OK**” button for 9 times.

a.) On the display appears as interval, 4 sec. on and 1 sec. off
Display refrigerator +5 C
Display freezer -18 C
b.) Lamp is switched on when the door is opened.
c.) The door alarm is activated.

Demo Mode deactivation:
Switch off the appliance or press 9 times the "**OK**" button.

6.6 User interface SPX (Perfect10, new software from April 2011)

The Demo Mode can be activated only, when on single-appliances and combi-appliances the air temperature is warmer than 10°C in the compartment or the temperature probes are disconnected.

Demo Mode activation:
Switch on the appliance and press 9 times the "**OK**" button. Afterwards sounds for approximately 3 seconds the buzzer. On the display appears "**dEMo**"

Attention!
The Demo Mode is still activated also when the appliance is switched off or the power fails.

a.) Press any button, on the display “**dEMo**” disappears. The temperature or the functions can be changed or activated on the user interface.
b.) With no input for 20 minutes, on the display appears “**dEMo**”.
c.) After a power failure, the buzzer sounds for approximately 10 seconds.

Demo Mode deactivation:
Press the “**OK**” button for approximately 10 seconds. Afterwards the buzzer sounds. On the display disappears “**dEMo**”.

6.7 User interface KNB

No Demo Mode is available.